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09/672,253	09/28/2000	Rustin W. Allred	TI-29300	6936

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EXAMINER
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RAMAKRISHNAIAH, MELUR

ART UNIT	PAPER NUMBER
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2643

DATE MAILED: 01/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
09/672,253

Applicant(s)  
Rustin W. Allred et al.

Examiner  
Melur. Ramakrishnaiah

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Nov 13, 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5 and 14 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-13, and 15-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☐ Other:

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***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 7-8, 9-13, 15-17, 18-22, are rejected under 35 U.S.C 102(b) as being anticipated by Schulhof (US PAT: 4,610,024).

Regarding claims 1, 9, and 18, Schulhof discloses self adaptive graphic equalizer operable to equalize the affects of an audio system on an audio signal comprising: an adaptive graphic equalizer (8, figs. 1-2) having a plurality of filters (16, 18, 20, 22, 24, 26, fig. 2), the plurality of equalizing filters having different center frequencies and spanning a predetermined audio band bandwidth, each equalizing filter being operable to filter an ith sub-band of the audio signal, a plurality of first filters (22, 24, 26, fig. 2) coupled to an audio system, each first filter being operable to filter an ith sub-band of an output signal of the audio system, a plurality of second filters (16, 18, 20, fig. 2) receiving the audio signal, each second filter operable to filter an ith sub-band of the audio signal, and a gain adjuster in (10, fig. 2) operable to adjust the ith sub-band of the adaptive graphic equalizer in response to a difference ith sub-band of the filtered output signal

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from a plurality of first filters and the *i*th sub-band of the filtered audio signal from a plurality of second filters (col. 2 lines 34-67, col. 3 lines 1-59), time averaging the *N* sub-bands of the filtered output signal, time averaging the *N* sub-bands of the filtered audio signal, normalizing the time averaged *N* sub-bands filtered output signal and time averaged *N* sub-bands of the filter audio signal, determining the difference between the *i*th filtered sub-band of the audio signal and the *i*th filtered sub-band of the output signal, adjusting the gain of the *i*th equalizing filter of an adaptive graphic equalizer (10, fig. 2) on response to the difference between the *i*th filtered sub-band of the audio and output signals, the equalizing filters having different center frequencies and spanning a predetermined audio bandwidth, and generating an equalized audio signal and providing the equalized audio signal to the audio system (col. 2 lines 53-67, col. 3 lines 1-58).

Regarding claims 2-4, 7-8, 10-13, 15-17, 19-22, Schulhof further teaches the following: a first plurality of lowpass filters (for example 22, fig. 2), each lowpass filter being operable to filter an *i*th sub-band of the filtered audio signal, a second plurality of lowpass filters (20, fig. 2), each lowpass filter being operable to filter an *i*th sub-band of the filtered audio signal, a mean normalization circuit in (28, 30, 32, fig. 2) operable to normalize the *i*th sub-band lowpass filtered audio signals and the *i*th sub-band lowpass filtered output signal and generate an *i*th sub-band of mean normalized output signals (col. 3 lines 46-58), a comparator coupled to the mean normalization circuit and operable to determine whether the *i*th sub-band lowpass filtered output signal is less than the *i*th sub-band of mean-normalized audio signal, the gain adjuster in (10, fig. 2) of the *i*th sub-band of the graphic equalizer operable to increment or decrement the gain of the

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ith sub-band of the graphic equalizer in response to the comparison operation (col. 3 lines 46-58), a difference circuit in (28, 30, 32, fig. 2) coupled to the mean-normalization circuit in (28, 30, 32, fig. 2) and operable to determine the difference between the ith sub-band lowpass filtered output signal and ith sub-band mean-normalized audio signal, and gain adjuster in (10, fig. 2) of the ith sub-band of the graphic equalizer operable to add or subtract the difference from the gain of the ith sub-band of the graphic equalizer (col. 3 lines 24-59), plurality of first and second filters each comprises bandpass filters (24/18, fig. 2), audio system is a speaker (8, fig. 2) microphone (12, fig. 2) combination system, generating the sound from the equalized audio signal using the speaker (8, fig. 2), measuring the generated sound using a microphone (12, fig. 2), adjusting the given ith equalizing filter comprises incrementing the I from 1 through N (col. 3 lines 24-59).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schulhof in view of Odlen (US PAT: 4,340,780).

Regarding claim 6, Schulhof does not explicitly teach the following: adaptive graphic equalizer comprises ten overlapping sub-bands, each sub-band having filters between + or - 18db.

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However, Odlen discloses self-correcting audio equalizer which teaches the following: adaptive graphic equalizer comprises ten overlapping sub-bands (col. 5 lines 29-50).

Thus, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Schulhof's system to provide for the following: adaptive graphic equalizer comprises ten overlapping sub-bands, each sub-band having filters between + or - 18db as this arrangement would provide better frequency selection for processing audio signals in the audio system for compensating for the differences between input and output audio signals as taught by Odlen, thus providing better audio quality for the user.

5. Claims 5 and 14, are allowed.

***Response to Arguments***

6. Applicant's arguments filed on 11-13-2003 have been fully considered but they are not persuasive.

Rejection of claims 1-4, 7-8, 9-13, 15-17, and 18-22 under 35 U.S.C 102(b) as being anticipated by Schulhof (US PAT: 4,610,024): Applicant's arguments on page 10 of his response are considered and are not persuasive. Applicant argues that "it is respectfully that Schulhof does not discloses or suggest the presently claimed invention including gain adjuster operable to adjust the *i*th sub-band of the adaptable graphic equalizer in response to the difference on the *i*th sub-band of the filter output from the plurality of first filters and from the *i*th sub-band of the filtered audio signal from a plurality of the second filters as defined in independent claim 1", albeit defined ... as defend in independent claim 9". Contrary to Applicant's interpretation of Schulhof

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reference, Schulhof clearly teaches the following: gain adjuster (reads on 10, figs. 1-2) operable to adjust the *i*th sub-band of the adaptable graphic equalizer in response to the difference on the *i*th sub-band of the filter output from the plurality of first filters (22, 24, 26, fig. 1) and from the *i*th sub-band of the filtered audio signal from a plurality of the second filters (16, 18, 20, fig. 2, note here in this case  $i=3$ , col. 2 lines 53-68, col. 4 lines 1-59). Applicant further argues that “The examiner alleges that Schulhof discloses a response to the difference signal between the *i*th filter sub-band of the audio and output signals. However, notwithstanding ... there is nothing in the Schulhof to disclose a difference”. Regarding this, Schulhof discloses comparing the audio signals from each of the first filters (22, 24, 26, fig. 2) with the each of the second filters (16, 18, 20, fig. 2) in comparators (28, 30, 32, fig. 2) to produce difference signal (reads on error signal), based on this, gain adjuster adjusts the gains of each signals (col. 3 lines 24-59). Since Schulhof teaches claims limitations of independent claims 1 and 9 as explained above, rejection of claims is maintained.

Applicant’s arguments on page 11 of his response regarding Olden reference is noted and not persuasive because, as explained above Schulhof teaches gain adapter to adjust *i*th sub-band ... in independent claims 1 and 9 (col. 3 lines 24-59).

In light of the above explanation, rejection of claims 1-4, 6-13, 15-22, are maintained as set forth in the office above.

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melur Ramakrishnaiah whose telephone number is (703) 305-1461. The examiner can normally be reached on Monday to Friday from 7 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (703) 305-4708. The fax phone number for this Group is (703) 305-9508.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

9. **Any response to this action should be mailed to:**



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Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

(703) 308-6306, (for formal communications intended for entry)

**Or:**

(703) 305-9508 (for informal or draft communications, please label

"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA., Sixth Floor (Receptionist).

  
Melur. Ramakrishnaiah

PRIMARY EXAMINER

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